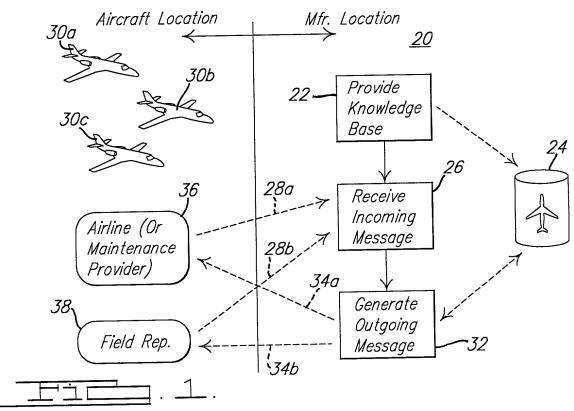
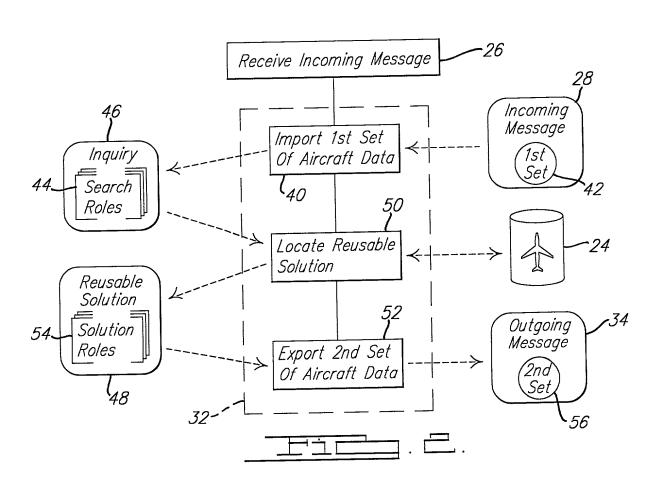
Serial No.: 09/942,082; filed 8/29/01 Atty. Ref. No.: 7784-000203

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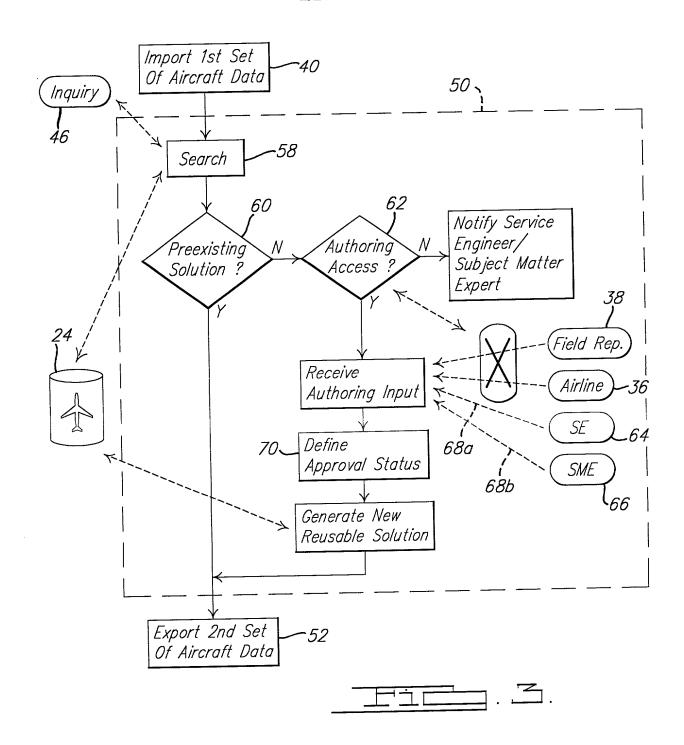






Serial No.: 09/942,082; filed 8/29/01 Atty. Ref. No.: 7784-000203

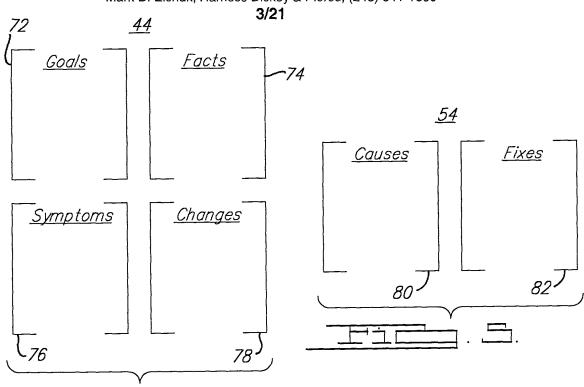
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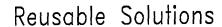
Inventor: Norden et al

Serial No.: 09/942,082; filed 8/29/01 Atty. Ref. No.: 7784-000203

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How To Use The Tool ⇒

Tool Kit ⇒

Primus Info ⇒

Training Schedule →

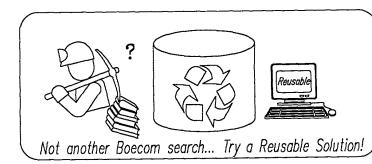
Integration With BOECOM ⇒

Top Ten Questions ⇒

Structures Issues ⇒

Project Overview ⇒

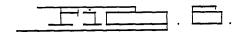
Go To Production Tool ⇒



(Take A Guest Tour

6,143 solutions available
1,320 approved for SE status
312 approved for Boeing/Customer

Goal



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This Tour gives you Read Access To The Production Data through a Guest account. Training is needed in order to effectively use the tool, but we are comfortable enough with the tool's intuitive nature and want you to see it first hand. The success of your search is subject to the limited amount of data currently in the tool. Contact Us if you have any questions.

User Name: Guest

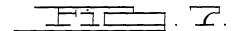
Password: boeing (lower case)

Domain: bcsr@bxsrd (menu)

Place a significant amount of information in one or all Search Fields and select Search in upper left corner. Appropriately, Use the New Session and Logout buttons on the left.

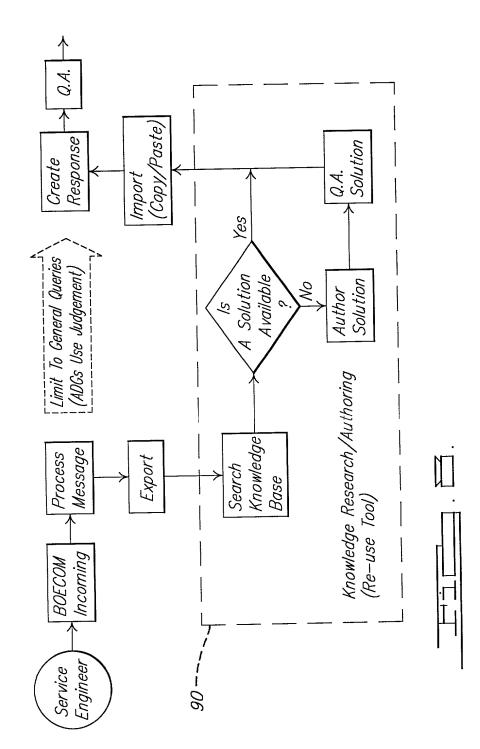
Login to Service Engineering Tool

Login to Field Service & Customer Tool



Title: Reusable Solutions for Aircraft Servicing Inventor: Norden et al Serial No.: 09/942,082; filed 8/29/01 Atty. Ref. No.: 7784-000203

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Inventor: Norden et al

Serial No.: 09/942,082; filed 8/29/01 Atty. Ref. No.: 7784-000203 Mark D. Elchuk, Harness Dickey & Pierce, (248) 641-1600

PRIMUS		
@ Goal	€ Change	STEPS TO CREATING A SOLN.
₽ Fact	The Root Cause as the Key To Solutions	
- Symptom	√ Fix	
	A Great Sample Solution	Properties — Status
	HTML Syntax used to link to files/solutions.	Things you don't need to say!





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A Goal statement is a clear statement of your customers' objectives—what the customer is trying to do or the question. Good Goals help the troubleshooting process. A Goal statement also serves as the solution's title. ALL SOLUTIONS MUST CONTAIN AT LEAST ONE GOAL

Examples of Good Goal Statements

Goal: How to repair a 3-inch longitudinal crack on the P&W 4000 engine nose cowl?

Goal: What are the operational restrictions to be followed for a "Gear down" dispatch?

Goal: Resolution of electrical power loss condition.

Fact

Fact statements should be formal and detailed, including as much information as necessary to uniquely identify the product being described, such as: model, ATA, part number. Fact statements may also be clarifying statements that are 'constant'.

Examples of Good Fact Statements

Fact: Model 747-400

Fact: ATA: 2161-00 Temperature Control Zone System

Fact: P/N: 60B92400-10 Fuel Boost Pump Pressure Switch

Fact: Condition occurred during landing

Facts Help Classify Problems

- 1. Do not put multiple Facts in a single statement
- 2. Modify existing solution to add new Facts as needed:

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Symptoms tell us what problems the customer is having. The conditions or events being observed that suggest or indicate something is discrepant (for example, flight deck effects, pilot reports).

1. Don't create "compound statements" – keep the Facts out of the Symptoms if you can.

Don't

Symptom: Smoke coming out of the engine during landing on 737–200 approaching Singapore

Do:

Fact: Model 737-200

Fact: Condition occurred during landing Symptom: Smoke coming out of the engine

2. Make the thoughts complete:

Do:

Symptom: No. 2 Engine smoking on startup.

Symptom: 3 inch crack on onboard midflap torque tube

Flight Deck Messages: <exact message text>

Symptom: EICAS: AUTO SPEEDBRAKE

Sympton: CMC: 27-18830 GEAR TILT PRESSURE(L)

Ordering Symptoms

If your solution has multiple Symptoms, order them in the solution as follows:

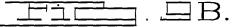
- More detailed first
- Less detailed second

Example of Good Symptom Statements

If a customer reports getting the message EICAS: FIRE CARGO

AFT on 747–400 and fire warning bell on:

Fact: Model 747–400 Symptom: EICAS: FIRE CARGO AFT Symptom: Fire warning bell on



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What has changed recently, or what maintenance actions were completed before the anomaly occurred? Not what was changed during the course of troubleshooting.

1. Think about what the customer may have done:

Change: Replaced actuator.

Change: New wiring installed.

- 2. Changes are not the cause-don't confuse the two.
- 3. Don't jump to conclusions:

Don't:

Change: The system worked before we installed a faulty processor card.

Do:

Change: Installed a new processor card.

The Root Cause as the key to Solutions

There should be only one cause per solution. If a solution has more than one possible Fix, is it the same problem of is it a similar problem? If it's the same problem, then its cause is identical. In this case, the solution may contain more than one Fix statement—but all Fix statements must be applicable.

If you must decide between applying one Fix statement or another (because only one will work), the solution should be split in two!

- Share as many common statements as possible among solutions.
- 2. Add unique statements to differentiate solutions.

HTML Syntax used to link to files/solutions.

linked Primus web site
Linked Solution where xxx is the local prefix and ### is the number of the solution
Linked Network file
 Rendering an image of a network file (jpg, gif, bmp, etc.) Tables: save table as an 'HTML' file, view in a browser, copy 'source' and paste into role (html)

√ Fix

Fix statements are the resolution of the problem. They resolve the customer concern, or provide the answer to the question. Author the Fix as a stand alone

- Add Notes within the Fix as needed to improve readability or to identify its applicability.
- If several steps must be performed in order, number the steps.
- Write using present tense.
- If a Solution is long and refers to multiple documents, list them as named references within the Fix and use the named reference numbers within the Fix.
- Make sure these references are also recorded as Facts for the solution.
- · Use spaces to format the statement for readability.
- Write everything as a present tense list of commands, as if you were reading them step-by-step to the customer.
- Do not include "if-then" statements in Fixes. This is an indication that you have two separate solutions.

A Great Sample Solution

Goal: Repair heat damaged strut stringer.

Fact: P/N:65B98746-12 STRUT STRINGER

Fact: Model: 747

Fact: JT9D-7 inboard engines

Symptom: Conductivity readings in excess of 39

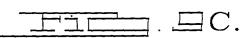
Symptom: Heat damaged strut.

Cause: Bleed air valve leak

Fix: 1. Reinforce the stringer with a nested angle fabricated from 2024–16, 0.125 min gauge.

- 2. Fasten with existing fastener locations.
- 3. Maintain 2D spacing and 1.4D edge margin

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STEPS TO CREATING A SOLN.

- 1. Search for an existing solution, use Matching statements to help. <u>Only create a solution if you can not find an existing one.</u>
- 2. Open the Create New Solution Frame
- 3. Add statements, using diverse and appropriate statement roles as described here, but especially multiple symptoms and changes.
 - Be explicit. For example saying 'won't actuate' is unclear what won't actuate? It is better to say. 'Leading edge flap drive unit won't actuate'.
 - -Write using present tense.
 - -In a 'fix' don't tell us what you did; tell us what to do in a step by step and complete process.
- 4. Find matching statements, adding or replacing as applicable. It is very important to reuse existing statements for better search efficiency and higher quality solutions.
- 5. Optional: add hyperlinks to other solutions or files
- 6. Check for duplicate solution: Select 'copy to problem description as Current Id'. If a similar or nearly duplicate solution exists, consider consolidating the two into one solution.
- 7. Be sure to have a meaningful and useful title. (comes from 1st goal, or as defined in 'properties')
- 8. Check spelling
- Change default Property values as necessary. Status default is draft'. Set Type to either 'systems', 'structures', or 'non-technical'.
- 10. Save the solution.

Fil. DD.

Properties - Status

Draft:

This is the default at time of initial creation and for work in progress. A Cause and Fix may or may not have been determined; additional data may be needed to complete the solution.

Review:

Solution contains a Fix (and cause if applicable) and is ready to be reviewed for content standards and technical correctness.

Approved for SE Group: Solution has a Fix And Cause if known), it has been reviewed and has undergone QA and is approved for use by the SE.

<u>Approved for SE:</u> As above, but approved for viewing by SE group SME.

Approved for Boeing:

As above, but approved for viewing by Boeing.

Approved for Customer:

As above but approved for viewing by customers.

Return:

An approved solution requiring updating.

<u>Obsolete:</u>

Retained for background information.

Detailed Criteria for the "Approved" Status levels are provided on our web site under Approval Process, Solution Approval Criteria.

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Things you don't need to say!

Because each Primus application statement is assigned a role, certain phrases are unnecessary when writing statements.



"I want to, "The customer is trying to"



"The Customer is using..."



"The customer is getting..."

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➤ Draft or Incoming Message
Action File Name:* Prep Date: Author:* Group:*
FIS-06-DEC-99-D489
Model: * ATA: * Opr: Base: Airline Support: * DEP: *
737 5770–40
Due Dates:
Subject: Home Office: Field:
Aluminum Spoiler Fitting Spherical Bearing Bore Corrosion
Draft Message Number:* Type:* FIS-06-DEC-99-D489 BOECOM Airplane Start KB Notes

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✗ Draft or Incoming Message	
Action File Name: *	Prep Date: Author:* Group:*
FIS-06-DEC-99-D489	06-DEC-99 Rudolph FIS
Model: * ATA: * Opr:	Base: Airline Support:* DEP:*
737 5770-40	
	Due Dates:
Subject:	Home Office: Field:
Aluminum Spoiler Fitting Spherical E	Bearing Bore Corrosion
Draft Message Number:*	Type: * Airplane Get Solution Notes
FIS-06-DEC-99-D489	BOECOM Library Lext Notes
Repair by opening bore up by	0.060 and install a swaged sleeve

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utions (1 solution found) for the details, If none apply, refine your description below.	oearing bore corrosion 737 65-67186 5770-40 Oversized Aluminium spoller fitting	roblem current statments, or add new ones. Click Update Search to e revised description. হাঞা ে show Clipboard
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98

Title: Reusable Solutions for Aircraft Servicing Inventor: Norden et al Serial No.: 09/942,082; filed 8/29/01

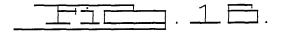
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0 0		SOLVES PROBLEM!			
Selected Solution	on tion on your selected solution:	SOLVES FRODELIME			
1	elete Send Solution 1 of 1	Previous Close Next			
Title: spherical	bearing bore corrosion	Comments History			
		<u>Use as Problem Description</u>			
ID: 2.0.34838.2452666 Domain: boeing Shared: Ye					
Owner: administrator Partition: Unassigned					
Type: repair ver	ification Status: Technical reviewed				
	737				
	65-67186				
	5770-40				
	Oversized				
	Aluminium spoiler fitting				
Symptom	spherical bearing bore corrosion				
✓ Fix	Typical repair for this bore — Open the bore up by C	0.060 and install a swaged sleeve:			
previously structurally OK —x opened up to 1.060 max and installed bushing					
-8 opened to 1.008 -10 opened to 1.006 in this case there were wear marks on the faces/structurally OK for hard anodize					
	Notes: Overhaul manual reference 57—56—61 design diameter —4,—9,—10 is 1.000—1.003	material 7075—T6			



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A₫dress ∭ soldev.cs.boeir	Soldev.cs.boeing.com/demo/explorer.asp	
Comericial Aviation Services	BOECOM	
BOEING commercial airplanes VIEW HOT SÖLUTIONS	Describe the Problem Type what you know about the problem, and click Search. Issue Type: Problem Select The Model Number:	
DESCRIBE THE PROBLEM VIEW THE SOLUTIONS	Describe the Task you are trying to perform: Air Conditioning Pack Air Cycle Machine Removals Due to Seizures	
CREATE NEW SOLUTIONS QUERY THE SOLUTIONS OPEN ID [GO SET PREFERENCES	Part #'s, Model #'s or other Facts: Model: 767 Opening: ANZ-AKL-00-00197F Action File: ANZ-AKL-00-00197F Describe the Symptoms of the problem (What characteristics indicate that there is a problem?):	
NEW SESSION LOGOUT	Describe any recent Changes that may be associated with the problem:	
	Start a new Primus eServer session	4 5

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SCALAIL THE PRUBLEM	Part #'s, Model #'s or other Facts:	
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PREFEREN	characteristics indicate that there is a problem of and humid conditions	
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		-
	Start a new Primus eServer session	4 b
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09 € △		Titles Only	Update Search Quick Refine Help		Local intranet
	Ø BOEING	View Solution Titles Only description below.	ID: (solution not saved) rch to search on the revised description. Mode: Text	conditions	1 Z C.
an having som dama levalarer as		Solutions title for the difficulty of the solution of the sol	ADD: Action File: ANZ-AKL-OU-001977 ADD: A Air Conditioning Pack Air Cycle Machine Seizes. Refine The Problem Update your current statments, or add new ones. Click Update Search to search on the revised description. ADD: ADD: ADD: ADD: ADD: ADD: ADD: ADD	Air Cycle Machine Alana ATA: 2151–10 Alana Anz-AKL-00-00197F Action File: ANZ-AKL-00-00197F Possible ice formation in ACM during hot and humid conditions	Update your problem description to find stronger solution matches.
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Inventor: Norden et al

Serial No.: 09/942,082; filed 8/29/01
Atty. Ref. No.: 7784-000203
Mark D. Elchuk, Harness Dickey & Pierce, (248) 641-1600
20/21

Serial No.: 09/942,082; filed 8/29/01 Atty. Ref. No.: 7784-000203

Mark D. Elchuk, Harness Dickey & Pierce, (248) 641-1600

X View Message
Action File Name: Message Number: Notes Attch Detail
ANZ-AKL-00-00374H 18 MAY 00 ATA 2151-10 MODEL 767 AIR CONDITIONING PACK AIR CYCLE MACHINE REMOVALS DUE TO SEIZURES REF /A/ ANZ-AKL-00-00197F /C/
In reply to the Ref /A/ message concerning "Air Conditioning Pack Air Cycle Machine Removals due to Seizure", the following is provided: Anz has reported experiencing an increased number of 767 air conditioning pack Air Cycle Machine (ACM) removals recently due to seizures. ANZ is evaluating these events to determine the reason for the recent ACM seizures.
Action: 1. ANZ asked whether it is acceptable to operate the air conditioning packs on the ground with all cabin zone selectors at full cold during transits using the APU as the air source. Please provide any comments that may assist ANZ in their evaluation of subject ACM seizures.
Response: Yes it is acceptable to operate the air conditioning packs at any setpoint during ground APU operations. During hot humid operations the pack will remove large amounts of water from the air. Under these environmental conditions, the air conditioning system operation could result in ACM failures due to ice formation for the following possible reasons:
Clogged water separator drain lines backing the water up into the pack and causing icing.
2. Dirty condenser / Reheater circuit resulting in reduced air flow could create a potential icing condition.
3. Blocked Low Limit Valve sense lines resulting in the LLV not recognizing a icing condition. Therefore not opening to provide hot air to melt the ice build up.
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